NOVA SCOTIA ELECTRICITY MARKET PLACE
GOVERNANCE COMMITTEE

ISSUES PAPER #1

OVERVIEW OF OBJECTIVES AND CRITERIA FOR DECISIONS

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1 INTRODUCTION

The Nova Scotia Electricity Marketplace Governance Committee (EMGC) was established in accordance with a commitment made in the Nova Scotia *Energy Strategy*.[1] In the *Energy Strategy*, the government said that it will "carefully and gradually open up the electricity marketplace in Nova Scotia." The EMGC was appointed to "recommend the implementation, development, structure, economic considerations, and rules to introduce electricity competition" in Nova Scotia. It is a multi-stakeholder consultative body reporting to the Minister of Energy.

To place its decision in context, the Committee wants to consider possible alternative futures for the electricity industry in Nova Scotia. The second section of this document raises issues related to that future.

The third and fourth sections of the document deal with decision criteria. Throughout its existence, EMGC members will be called on to make decisions relating to the design of the electricity market for Nova Scotia. The purpose of this paper is to identify and explore the implications of a set of decision criteria that Committee members can use to evaluate the power market design choices they face.

The third section discusses efficiency and risk re-allocation as the main drivers for electricity restructuring. The fourth section discusses other criteria for decision-making. Making choices about electricity restructuring often requires tradeoffs among competing objectives. For example, the cost of an alternative (ongoing or transition cost) must often be weighed against the likely impact on the effective functioning or competitiveness of the electricity market. The purpose of these sections is to enunciate some fundamental principles against which to test the proposed elements of market development.

2 FUTURE DIRECTIONS

As the *Energy Strategy* recognized, the direction of electricity markets in North America is towards greater integration across regions and towards increased competition.[2] The rules for these markets are under constant renovation, with pressure from federal and state regulators and from industry participants. In Canada, the only electricity system with which Nova Scotia is directly linked, that of New Brunswick, will be changing following its recently completed market design process. Nova Scotia consumers will not want to be left with high prices or other negative consequences if restructuring is successful in these other jurisdictions. In considering its recommendations for Nova Scotia, the EMGC can take account of the likely future directions for electricity here, given these pressures from outside and inside the province.

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[1] Government of Nova Scotia, *Seizing the Opportunity: Nova Scotia's Energy Strategy*, 2001. Referenced as *Energy Strategy*.

[2] *Energy Strategy*, Vol. II, Part III, pg. 11.

The *Energy Strategy* was clear about some of the future direction for the electricity supply industry in Nova Scotia. It said that the industry would satisfy the requirements the national regulator in the United States, the Federal Energy Regulatory Commission (FERC) sets for reciprocal access to markets there. The Energy Strategy clearly circumscribed full competitive access to include only wholesale customers, with retail customers accessible only for sellers of power from renewable sources.

2.1 Requirements for Access to US Markets

For Nova Scotia generators to access markets directly in the United States, the province's electricity supply system must meet the requirements of FERC Orders No. 888 and No. 889. Compliance with these Orders requires opening the Nova Scotia wholesale market to competition and opening the transmission system to non-discriminatory access. That opening is through the creation and approval by the regulator of an Open-Access Transmission Tariff (OATT) and by the creation and use of an Open Access Same Time Information System (OASIS).

However, these FERC orders are now relatively old. The newer FERC Order No. 2000 pushes the transmission system towards large Regional Transmission Organizations (RTOs). Although membership in RTOs was at first voluntary for transmission owners, FERC is applying increasing pressure to conform. It is also planning to specify a standard market design for all RTOs. The standard market design will likely include a competitive wholesale pool market with locational marginal pricing.

The implication of a competitive wholesale pool is that sellers and buyers interact in real time, through the agency of a market operator. With locational marginal pricing, the price of electricity could differ across regions when the local conditions of supply and demand, coupled with transmission congestion, produce different values of electricity.

Although membership in an RTO (and therefore compliance with these conditions, including the standard market design) is not currently a condition for reciprocity in the United States, it is possible that it could become so in the future. Such a change could affect the Nova Scotia market.

2.2 Requirements for Access to New Brunswick Transmission System and Market

Nova Scotia currently is now directly connected electrically only to New Brunswick. For generators in Nova Scotia to access any market other than New Brunswick, they must be able to wheel power through the New Brunswick transmission system to their customers, who are likely to be in the United States.[3]

The New Brunswick market design committee (MDC) recommended that New Brunswick allow access to its transmission system for sellers from outside the province even if they are from jurisdictions which do not offer reciprocal transmission access. It

[3] Emera currently has a contract to supply power to PEI, wheeling the power through New Brunswick.

did not comment on conditions for access to wheeling, beyond the understanding that wheeling charges and wheeling access issues would be dealt with in the OATT prepared by NB Power. If this recommendation is adopted, therefore, Nova Scotia electricity suppliers can access customers in New Brunswick without the necessity that New Brunswick suppliers can access Nova Scotia markets.

These conditions could change if New Brunswick joins the RTO currently being formed in the US Northeast. Then New Brunswick would likely adopt whatever requirements are set by the RTO, which could include requiring reciprocal access.

2.3 Competitive Wholesale Pool Market

Creating and maintaining a competitive wholesale pool market for electricity in Nova Scotia would take restructuring well beyond that specified in the *Energy Strategy*. For example, it would require that additional customers have access to competitive supply. It would also have high transition and operating costs relative to the size of the system.

A competitive wholesale pool market will continue to exist in New England. It will very likely be merged with the market in New York to form a Northeast RTO. This RTO will also feature locational marginal pricing, a direction both ISOs were taking even before the FERC's move towards a standard market design.

The entire Control Area (New Brunswick, Nova Scotia, parts of Northern Maine, PEI) could become a separate control area within the Northeast RTO, using the RTO's infrastructure. The entire control area would then have a competitive wholesale pool market with locational marginal pricing. This is the direction in which increasing integration of the North American electricity market would push Nova Scotia and the rest of the control area. Such movement is not inevitable; there are counter pressures even within the United States, and Nova Scotia is, at present, on the end of the system and therefore relatively isolated.

If New Brunswick does not affiliate with the Northeast RTO, it would be very difficult for Nova Scotia to do so.

2.4 Implications for the EMGC

The EMGC faces several unknown conditions in the Northeast market, some of which will become clearer over time. The scope and design of the Northeast RTO should emerge in the next several months. The direction of change in New Brunswick will become better defined as the government formally reacts to the recommendations of its Market Design Committee.

However, the operation of the new markets in New England and New Brunswick will not be well known. Other factors potentially impinging on the Nova Scotia electricity market, such as the size and cost of the natural gas resource from the Scotian offshore, will also not be known. With the future unknown, the EMGC could seek to ensure that

its decisions are compatible with any of the more likely future structures for the electricity market in the Northeast United States and Maritime Canada.

3 EFFICIENCY AND RISK ALLOCATION

In general, electricity restructuring initiatives are aimed at two goals: increasing the efficiency of the electricity industry, and reallocating its risk to the parties most appropriate to assume it.

3.1 Efficiency

An important goal in electricity market design is to achieve economic efficiency in the electricity system. The most economically efficient solution is that which uses the fewest resources to accomplish the task.

Economic efficiency has several dimensions: allocative efficiency, dynamic efficiency, and productive efficiency.

- **Allocative efficiency** is the ability of the economic system to allocate resources to those uses with the greatest value to the society. In the electricity industry, allocative efficiency requires that electricity be priced at a level which reflects its true costs to the society, including any environmental costs.

- **Dynamic efficiency** is the efficient allocation of resources over time. Achieving dynamic efficiency implies that new technology is adopted as it becomes economic. It also implies that new investments are made when the returns to society from the investment are greater than the returns from any other investment use.

- **Productive efficiency** (sometimes called X-efficiency) is the efficient use of the resources available. A system is efficient if it produces its output or meets its end-use needs using the minimum possible total of resources.

The criterion of economic efficiency includes cost-effectiveness of proposed options. Cost-effectiveness considers, for example, whether an option with a higher initial cost but lower operating costs will be cheaper in the end than one with lower initial costs and higher operating costs.

3.2 Risk Allocation

There are many risks in electricity markets. They include risks of insufficient demand, excessive demand (and consequent unreliability), electricity prices that are higher or lower than anticipated, technological risk, and fuel price risk, to name some. In a regulated market, all these risks are bundled and effectively placed on the consumer, through the mechanism of regulated rates.

In a restructured market, these risks can be unbundled and reallocated to the entities best equipped to manage them. Many of these risks are removed from consumers and placed on investors. Other risks are made more explicit to consumers, who in a competitive market may be better able to understand and hedge against them. Allocating risks more explicitly allows consumers and producers to choose what risks they want to take and how much they are willing to pay to reduce the risks.

4 PRINCIPLES FOR MARKET EFFECTIVENESS

In addition to pure economic efficiency, other considerations will enter into the Committee's deliberations. Some of these can best be seen as ways to achieve economic efficiency. Others are factors which are not directly related to efficiency, but do relate to the desirability of the outcome.

Reliability

One of the most important characteristics of any electricity supply system is its reliability. In restructuring the Nova Scotia system, the EMGC must take into account any possible impacts on reliability.

- Market Rules, licensing procedures or other provisions must ensure that market participants can fulfill their roles in the market place, without imposing undue restrictions on participation

- The system operator must have sufficient authority to operate the transmission system to preserve its integrity and reliability and ensure reliable service to the greatest number of customers.

- The market structure and Market Rules and protocols should not create artificial incentives which reduce system reliability.

Transparency

Market participants and others should be able to understand the rules and the operation of the market clearly. Decisions taken by the system operator, market operator, and other agencies should follow clear enough rules that other observers, given the same information, could replicate the decisions.

- Market Rules and protocols should be as simple as possible, consistent with the goals of economic efficiency and market function.

- Actions by the market operator and system operator should be capable of audit and verification.

- Actions of market participants under Market Rules should be auditable.

- There should be a clear and documented procedure for changes in the Market Rules and protocols.

- Market information must be available to all market participants and others on a timely basis.

Fairness

The market design should not artificially discriminate between participants or categories of participants.

- Market rules should not artificially discriminate between categories of participants or between participants in the same category.

- Actions taken to enforce the market rules should follow written rules and protocols.

- Rules governing access to the transmission grid and to the wholesale market should not artificially discriminate among participants.

Robustness

To the extent possible, the Market Rules and protocols should function well under a wide range of market circumstances.

- The Market Rules and protocols should be robust enough so that the market will function under all but truly extraordinary circumstances.

- The market operator and system operator should have enough authority that they can deal with extraordinary circumstances without undue disruption either to the market or to the electricity supply system. Such measures should follow the principles of the market.

- Procedures for changing the Market Rules and protocols should be effective enough to allow adjustments to deal with extraordinary circumstances which recur. The objective should be to incorporate such recurring circumstances into the regular workings of the competitive market.

Enforceable

Some agency must be charged with monitoring and enforcing the Market Rules and protocols.

- Some agency (the market operator, system operator, regulator) must have the power to monitor the market for transgressions of Market Rules and protocols. That agency must have the power to impose sanctions on market participants who violate the Market Rules.

- The process of investigation of breaches of Market Rules and protocols should be transparent. It should follow written rules of procedure under the Market Rules, and it should be auditable. Sanctions should be appealable to an appropriate body.

Environmental Impact

The Energy Strategy pointed to several initiatives which could reduce the environmental impact of electricity generation in the province: encouragement of renewables, encouragement of cogeneration, and institution of net metering. In addition, the EMGC's decisions should be consistent with reducing the environmental impact of the generation and use of electricity in Nova Scotia.

Protection of Existing Consumers

Existing consumers of electricity have paid for the existing supply system. The EMGC will consider their interests in the existing system and avoiding exposing existing consumers to risks of volatility in electricity prices.